

Scientists seek safe carbon dioxide storage for 'greener' power generation (w/ Video)

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The U.S. Department of Energy (DOE) has announced plans to fund research at the University of Alabama at Birmingham (UAB) School of Engineering on technologies that would help reduce greenhouse gas emissions through the capture and permanent safe storage, or sequestration, of carbon dioxide (CO₂). The project is in collaboration with Southern Company, the parent company of Alabama Power.

Funded by the DOE through the 2009 American Recovery and Reinvestment Act, the UAB research has two principal goals. First, it will help identify the geological formations that are best and safest for the sequestration of CO₂ deep underground. Second, UAB will help train the workforce for implementation of CO₂ capture and storage by involving graduate and undergraduate students in the research and introducing into its curriculum an advanced course on coal combustion and gasification, climate change and carbon sequestration.

"Southern Company's involvement enables our students and research team access to crucial industry resources, operations and information," said Peter Walsh, Ph.D., a professor of engineering at UAB. "We are delighted to partner with Southern Company on a project that enables us to contribute to a solution of one of the most interesting, important and complex issues of our time."

CO₂ capture and storage, recently named one of Five Technologies That Could Change Everything by The Wall Street Journal, is being explored by the nation's energy providers as a means to curb [greenhouse gas](#)

[emissions](#). CO₂, a byproduct of fossil-fuel-based electric power production, is considered a greenhouse gas that potentially contributes to global warming.

The capture and underground sequestration of CO₂ includes separation of CO₂ from combustion products at fossil fuel power plants, pipeline transport and injection into underground geological formations. The geological formations used for sequestration will have been previously characterized by geologic drilling investigations to be permanent storage sites.

For a geological formation to be viable as a storage location, a layer of permeable rock capable of holding injected CO₂ must be present. These rock layers must be topped by impermeable cap rocks or seals that prevent the release or escape of the injected CO₂.

Proposed geological carbon sequestration sites are very similar to the natural geological conditions that trap oil and natural gas deposits. There are already numerous naturally occurring deposits of CO₂ trapped in the earth's geology throughout the Southeast.

As partners in the project, Southern Company will supply UAB with geological core samples and access to pilot injection sites throughout the U.S. Southeast that are being sponsored by the DOE.

UAB researchers and their student assistants will then verify the rock samples' ability to safely and permanently confine injected CO₂. In collaboration with Southern Company's own geologists and engineers, UAB will help identify the rock layers that would best serve as cap rock to seal against upward migration or loss of injected CO₂.

"Through the classroom and with research experience we hope to generate interest in carbon capture and storage technologies and

eventually develop employees who will design, build and operate the equipment," said Richard Esposito, a Southern Company principal geologist who is also a Ph.D. candidate in the UAB School of Engineering.

"This technology is something that all fossil-fuel-based energy providers will potentially be required to deploy by 2020 in an effort to comply with proposed carbon legislation. Southern Company and other utilities will need a well-trained workforce to commercially deploy the technology and the partnership with UAB in this project will help get us there," Esposito said.

The DOE grant for the UAB CO₂ storage research in conjunction with Southern Company is \$299,940 over three years. Forty-two other universities received funds for similar research projects aimed at bolstering CO₂ capture and storage practices throughout the country. Click here for a link to the DOE statement on the UAB funding.

Source: University of Alabama at Birmingham ([news](#) : [web](#))

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